Amendments to the Specification:

Pursuant to 37 C.F.R. § 1.121(b) kindly amend the specification as follows. Amendments to the specification are made by presenting replacement paragraphs or sections marked up to show changes made relative to the immediate prior version. The changes in any amended paragraph or section are being shown by strikethrough (for deleted matter) or underlined (for added matter).

On page 6, second paragraph

U.S. Patent No. 6,311,655 shows multi-position variable cam timing system having a vane-mounted locking-piston device. An internal combustion engine having a camshaft and variable camshaft timing system, wherein a rotor is secured to the camshaft and is rotatable but non-oscillatable with respect to the camshaft is ~~diseribed~~ described. A housing circumscribes the rotor, is rotatable with both the rotor and the camshaft, and is further oscillatable with respect to both the rotor and the camshaft between a fully retarded position and a fully advanced position. A locking configuration prevents relative motion between the rotor and the housing, and is mounted within either the rotor or the housing, and is respectively and releasably engageable with the other of either the rotor and the housing in the fully retarded position, the fully advanced position, and in positions therebetween. The locking device includes a locking piston having keys terminating one end thereof, and serrations mounted opposite the keys on the locking piston for interlocking the rotor to the housing. A controlling configuration controls oscillation of the rotor relative to the housing.

On page 9, last but one paragraph:

Figs. 1a, 1b, 1c, and 1d shows an embodiment of the present invention.

On page 10, 1st and 2nd paragraph:

Fig. 3 shows a cross-sectional view taken along line A-A in ~~figure~~ Fig. 2.

Fig. 4 is a cross-sectional view taken along line B-B in ~~figure~~ Fig. 2.

On page 10, last paragraph:

Figs ~~Figures~~ 1a to 1d show the control system of the present invention in the following positions: null (~~figure~~ Fig. 1a), advance (~~figure~~ Fig. 1b), retard with locking pin released (~~figure~~ Fig. 1c) and retard with locking pin engaged (~~figure~~ Fig. 1d). In each of the figures, a cylindrical spool (22), having three lands (18)(19)(20), rides in bore (17). The engine oil supply (13) is routed to the bore (17) through passage (14), which has a check valve therein, and a first passage (15) which is in direct fluid communication with a source of oil such as engine oil supply (13). It is noted that the source of oil provides means for normal VCT mechanism. In other words, without the first passage (15), engine oil supply (13) still maintains oil supply for the VCT mechanism. First passage (15) branches off engine oil supply (13) for implementing the present invention. Passage (16) vents to the engine oil sump (not shown). A second passage L or lock passage (23) leads to a lock pin (11) which is disposed to fit into a recess (12) to thereby locking the phaser in position. Second passage L (23) is used for directing oil to and from the locking pin. A third passage (16) forms a vent which vents the circulating oil within the VCT system to an engine oil sump (not shown). One of the functions of the third passage (16) is to allow oil to flow from the locking pin (11) region back to the oil sump or oil supply sump.

On page 11, first paragraph:

Passage (8) leads to advance chamber A (2), and passage (10) similarly leads to retard chamber R (3). The two chambers are separated by a vane (1) which forms part of the phaser. In a "cam torque actuated" (CTA) phaser of the kind shown in ~~figures~~ Figs 1a-1d, passage S (9), with check valves (6) and (7), provides a recycling line to allow actuated fluid to pass from A to R, or R to A. The direction of the actuated fluid depends on the position of the spool valve, in the manner described in patent 5,107,804, entitled VARIABLE CAMSHAFT TIMING FOR INTERNAL COMBUSTION ENGINE which is hereby incorporated herein by reference. It will be understood by one skilled in the art, however, that the system of the invention can be used in phasers which are directly energized or moved by oil pressure, hybrid arrangements, or any other arrangements which uses a single spool valve to control the phaser.

On page 11, second paragraph:

Referring back to ~~figure~~ Fig. 1a, the spool (22) is in the null position. The first land (18) blocks the vent passage or the third passage (16) that disallows source oil to drain from the locking pin (11). The second land (19) blocks source oil from the advance branch line (8) and

the third land (20) blocks source oil from the retard branch line (10). The makeup source oil supplied to the spool and subsequently the branch lines is supplied via a supply line containing a check valve (14) to prevent the return of oil from the spool (22) into the source during pressure pulses due to torque reversals.

On page 12, 1st paragraph:

~~Figure~~ Fig 1b shows the spool (22) in the advanced or advancing position. The second land (19) blocks the advance branch line (8) from exhausting from advance chamber A. The third land (20) no longer blocks the retard branch line (10), thereby allowing source oil and oil that is being drained from the retard chamber (3) to flow through the source branch line (9) and the check valve (6) adjacent to the to the advance line (4), to fill up the advance chamber (2), simultaneously allowing cam torque reversals to move the vane (1) accordingly. Similar to ~~figure~~ Fig. 1a, source oil is still being supplied to the locking pin (11), thereby maintaining the locking pin (11) disengaged from recess (12).

On page 12, 2nd paragraph:

~~Figure~~ Fig. 1c shows the spool in a retard position or retarding position, with the locking pin disengaged. The amount of oil supplied to the locking pin (11) is still adequate in quantity to keep the locking pin (11) from engaging recess (12). The third land (20) completely blocks the retard branch line (10). The source oil and the oil draining from the advance chamber (2) through the branch line (4) combine and flow through the source branch line (9) through the check valve (7) adjacent to the retard branch line (10), into the retard chamber (3), thereby allowing cam torque reversals to move the vane toward the retard position. Similar to ~~figures~~ Fig. 1a and 1b, source oil is still being supplied to the locking pin (11), thereby maintaining the locking pin (11) disengaged from recess (12).

On page 12, 3rd paragraph:

~~Figure~~ Fig. 1d shows the spool (22) in the retard position, with the locking pin engaged. The first land (18) no longer blocks the vent passage (16). The second land (19) now blocks the supply line (15) of source oil that was maintaining the locking pin (11) in a disengaged position; and no longer blocks the advance branch line (8) from source oil. The third land (20) now

blocks the retard branch line (10) from the source oil. With the lands (18)(19)(20) in these specific positions, source oil flows through the check valve (14) into the bore (17) containing the spool (22). The source oil in combination with the oil draining from the advance chamber (2) move through the check valve (7) adjacent to the retard branch line (10) to fill the retard chamber (3) and move vane (1) accordingly. The locking pin (11) engages recess (12), since the supply of oil is no longer present and the remaining oil is drained off through the vent passage or third passage (16).

On page 12, last paragraph:

It is understood that the locking pin (11) could disengage the rotor when the VCT mechanism is in the retard and null state, and the locking pin (11) could engage the rotor when the VCT mechanism in the advanced state, as within the teachings of the invention, by reversing the positions of land (18) and passages (15), (16) and L (23)on the other end of the spool. As can be seen by referring to ~~figures~~ Figs. 1a-1d, pin (11) is counter balanced by an elastic element (25) biased upon or engaging an opposite end in relation to the end which is in fluid contact with oil within the second passage L (23). The force exerted by the elastic element (25) is substantially constant. Further, elastic element (25) may be a spring, or more specifically, a metal spring.

On page 13, 2nd paragraph:

Fig~~ure~~. 2 shows a cross-sectional view of a phaser. Fig~~ures~~. 3 and 4 show cross-sectional views along lines A-A and B-B of ~~figure~~ Fig. 2. In general the figures show how the control system of the invention can be fitted into a cam phaser of the type having a spool valve in the center of the rotor. The spool in turn has an extra land 18 for controlling energized fluid which flows to and from the proximity of lock pin 11 including passage 23 and passage 16.

On page 13, 3rd paragraph:

Referring to ~~figure~~ Fig. 2, a face view of portions of a phaser of the present invention is shown. More specifically, ~~figure~~ Fig. 2 shows locking pin 11 and passages L(23) to/from the locking pin 11 in face view. A rotor that oscillates within a housing (not shown) in which three Vanes (1) being circumferentially extended therefrom and formed thereon is shown. At the

center of rotor is a circumferential openings of a substantially cylindrical shape that permits spool 22 to move therein. 2 sets of holes each set comprising of the same is provided. Further, note the second passage L (23) ~~facilitating~~ facilitates fluid communication between the source (not shown) and the pin (11). In addition, ~~passage~~ passages (4) and (5) functions as described in Figures 1a-1d.

On page 13, 4th paragraph:

Referring to Fig. ~~figure~~ 3, a cross-sectional view along line A-A of ~~figure~~ Fig. 2 is shown. More specifically, ~~figure~~ Fig. 3 is a cross section that shows the lock pin passage L (23) and the vent passage V16. Source (13) supplies oil and spool valve (22) is slidably positioned at the center of the rotor (4). Lock vent passage (16) channels out excessive oil.

On page 13, 5th paragraph:

Referring ~~figure~~ Fig. 4, cross-sectional views along line B-B of ~~figure~~ Fig. 2 is shown. More specifically, ~~figure~~ Fig. 4 is a cross section that shows the lock pin passage L (23) and the source passage (13) and passage (15). Spool (22) controllably moves or slides at the center of rotor (4) and is limited by bore (17).

On page 14, last paragraph:

The present invention further provides a unique feature that combines the above two functions. This feature can be portrayed, for example, by referring back to ~~figures~~ Figs 1a-1d. For instance when the spool valve (22) is moving out and crosses null the first command based on spool position is to move the VCT to the locked position. The second command occurs after the spool valve moves out further. So the sequence of events when the spool valve (22) is moving out is to relocate the VCT first and then locking pin (11) second. When the spool valve is moved "in", the staging of events is reversed. The first little movement of the spool valve first unlocks the VCT, even before the spool valve reaches null. After moving in past null the VCT then can move off the locked position. This is desirous because if you command the VCT to move before the locking pin is disengaged one tends to wedge the locking pin in place and not be able to unlock the VCT via the actuating force against the pin. As can be seen, the present

invention forestalls control strategies that need to give the VCT enough time to release before commanding it away from the locked position.